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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/709,312	11/13/2000	Yong-Kyu Jang	6192.0166.AA	3446

7590
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05/06/2003

EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/06/2003

#11

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/709,312

Applicant(s)

JANG ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Objections

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 24 has been renumbered as claim 23.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 11 and 14 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recited limitation in claim 11 'surface of the passivation layer has embossment' and the recited limitation in claim 14 'wherein a portion of a surface of said passivation layer' appear to be incomplete.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al (Kubo 1) (U.S. Patent No. 6,195,140) in view of Kubo et al. (Kubo 2) (U.S. Patent No. 6,330,047).

a. As to claim 1: Kubo 1 discloses a reflective transmission type thin film transistor liquid crystal display (Fig. 46) with a glass substrate (201), at least one thin film transistor (204) on the substrate for controlling a pixel a passivation layer (244) having at least one contact hole (245) in a source region of the thin film transistor, a transmissive pixel electrode (246) which is formed on the passivation layer and is connected with a source electrode (249) of the source region through

a contact hole (245) and a reflective pixel electrode (242) which is formed on the passivation layer and is connected with the source electrode (249) of the source region through a contact hole (245) wherein pixel area (206) is composed of a transparent area in which only the transmissive pixel electrode (Region T) exist and a reflective area (Region R) in which the reflective pixel electrode exist. Kubo 1 does not disclose a buffer layer. Kubo 2 on the other hand, discloses a buffer layer (305) between the reflective pixel electrode (304) and transmissive pixel electrode (302) and the pixel area of the TFT has a transparent area (326) excluding the reflective pixel electrode and a reflective area (304 and 305) including the reflective pixel electrode (col.48, lines 56-67 and col.49, lines 1-4) (Fig. 58). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the buffer layer to enhance the light shading thus adding additional protection of the switching element from light (col. 3, lines 2-6).

As to claims 2-16: Kubo 1 discloses in Figs. 46-51 that the transmissive pixel electrode and the separating insulator have a hole (245) revealing some part of the source region (249) and the reflective pixel electrode (242) which is formed over the transmissive pixel electrode (246) is connected with the source electrode of the part of the source region via the hole (Kubo 1 refers to contact holes 245). In Fig. 50C, Kubo 1 discloses that the transmissive pixel electrode which is formed over the reflective pixel electrode and the reflective pixel electrode is made with metals including aluminum and the transmissive pixel

electrode is made with indium metal oxide lineage (Col 38, lines 23-26). In Fig. 48A, Kubo discloses that the transparent area takes form and shape of window of the reflective area. In Fig. 50C, Kubo 1 discloses that the reflective electrode is on top of the transmission electrode without any buffer layer. Kubo 1 discloses a reflective transmission type thin film transistor liquid crystal display with a glass substrate (201) at least one thin film transistor on the substrate for controlling a pixel (204), a first pixel electrode (203) which is deposited and patterned concurrently with gate (210) of the thin film transistor with an upper non-oxidizing metal layer (203b) and a lower transparent conductor layer (203a), a passivation layer (244) which is formed over the thin film transistor and the first pixel electrode and which has a contact hole (245) at a source contact region and a hole (shown but not numbered in Fig. 46) at the transparent window and neighboring region, and a second type pixel electrode (206) which is formed over the passivation layer, is patterned to cover whole pixel area except the transparent window region, and is connected with a source electrode of the thin film transistor through the contact hole (245) and connected with the non-oxidizing metal layer of the first type pixel electrode at the neighboring region (middle of Fig. 46). Kubo 1 however, does not disclose that the transmissive pixel and reflective pixel is in direct contact with the source electrode, the interlayer insulating layer is made out of photosensitive acrylic resin and is made out of non oxidizing metal and the hickness. Kubo 2 on the other hand discloses, in Fig. 58 Kubo 2 discloses that the transmissive pixel electrode (302) and the

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reflective pixel electrode is in direct contact with the source electrode (318). Kubo 2 discloses an interlayer insulating layer (303) made out of photosensitive acrylic resin that is transparent. Kubo 2 discloses a photosensitive transparent insulator as discussed above, and a non-oxidizing metal such as Molybdenum.

Substituting other metal that is an alloy of Molybdenum is an obvious variation. Kubo 2 also discloses the thickness of the layer (col. 46, line 23). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the buffer layer to enhance the light shading thus adding additional protection of the switching element from light (col. 3, lines 2-6).

As to claims 21, 23, 29 and 48: Kubo 1 does not disclose a buffer layer. Kubo 2 on the other hand discloses, a liquid crystal display, comprising: a substrate (301), a gate wire (328) formed on said substrate and comprising a gate pad, a gate line (328) and a gate electrode (308), a gate subsidiary pad formed on the gate pad a data wire (329) formed on the substrate, intersecting the gate wire and comprising a data pad, a data line and a source electrode and a drain electrode (Figs. 53-55), a data subsidiary pad formed on the data pad, a passivation layer, a transparent pixel electrode (302) formed on the passivation layer and electrically connected to the source electrode (318) and a reflective pixel electrode (304) formed on the passivation layer and electrically connected to the source electrode, wherein said transparent pixel electrode is (302) and the drain electrode are made from the identical film (col. 46, lines 52-54). Kubo discloses a buffer layer (305) made of refractory metal such as Molybdenum, a

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capacitor electrode. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the buffer layer to enhance the light shading thus adding additional protection of the switching element from light (col. 3, lines 2-6).

As to claims 22, 24-28, 30 and 49-52: Kubo 1 does not disclose that the transmissive p-pixel electrode and the reflective pixel electrode are formed on the passivation layer and electrically connected to the source electrode via a contact hole, does not disclose a buffer layer and a capacitor electrode. Kubo 2 on the other hand, discloses a transparent pixel electrode is indium tin oxide (ITO) (col. 46, lines 41-42), the transmissive pixel electrode and the reflective pixel electrode are formed on the passivation layer and electrically connected to the source electrode via a contact hole (326) formed in the passivation layer (316), and the buffer layer is silicon nitride (col. 46, line 56), the passivation layer (316) covers buffer layer (305) and the transmissive pixel electrode, and the reflective pixel electrode is formed on the passivation layer and electrically connected to the source electrode via a contact hole formed (326) in the passivation layer (316), a window (326) formed through the passivation layer and the buffer layer to expose the transmissive pixel electrode (302), overlapping of the transparent pixel electrode (302), the opening in the reflective pixel electrode (326) and the capacitor electrode can be seen in (Figs. 55A-H). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made

to adapt the buffer layer to enhance the light shading thus adding additional protection of the switching element from light (col 3, lines 2-6).

As to claims 17-20 and 31-47: Kubo 1 does not disclose a method of fabricating the device. Kubo 2 discloses a method of fabricating a liquid crystal display device having the steps of forming a gate wire (328) formed on a substrate (301), gate wire comprising a gate pad, a gate line and a gate electrode (308) forming a gate insulating layer on the gate wire forming a data wire (329) formed on the gate insulating layer (310), the data wire comprising a data pad (315), a data line (329), a source electrode (306 and 314) and a drain electrode, forming a transparent pixel electrode (302) simultaneously with a subsidiary gate pad or a subsidiary data pad and forming a reflective pixel electrode (304) wherein the transparent pixel electrode and the reflective pixel electrode are electrically connected to the source electrode (col. 46, lines 7-67). The limitations recited in the rest of the claims are also disclosed by Kubo 2 in (Columns 47-57). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the method of fabricating the device as disclosed by Kubo 2 such that a display device can be fabricated with a buffer layer (305) to enhance the light shading to the device thus adding additional protection of the switching element from light (col. 3, lines 2-6).

Response to Arguments

7. Applicant's arguments with respect to claims 1-52 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

PR

May 2, 2003

TOANTON
PRIMARY EXAMINER